

<110> Fritz, Christian
Youngman, Philip

<130> 06286-090001

<141> 1998-09-30

<151> 1997-12-31

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<212> PRT

<213> Streptococcus pneumoniae

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<220>

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1 5 10 15	
cca tct ggt ctc tgg att gga caa gta ttc ttt caa atc aat cta cgc	96
Pro Ser Gly Leu Trp Ile Gly Gln Val Phe Phe Gln Ile Asn Leu Arg	
20 25 30	
gag cat ggt tct ggt aac act gga acg acc aac acc ttc cgc att tta	144
Glu His Gly Ser Gly Asn Thr Gly Thr Thr Asn Thr Phe Arg Ile Leu	
35 40 45	
ggt aag aaa gct ggt atg gca acc ttt gtg att gac ttt ttc aaa gga	192
Gly Lys Lys Ala Gly Met Ala Thr Phe Val Ile Asp Phe Phe Lys Gly	
50 55 60	
acc cta gca acg ctg ctt cag att att ttt cat cta caa ggc gtt tct	240
Thr Leu Ala Thr Leu Leu Pro Ile Ile Phe His Leu Gln Gly Val Ser	
65 70 75 80	
cct ctc atc ttt gga ctt ttg gct gtt atc ggc cat acc ttc cct atc	288
Pro Leu Ile Phe Gly Leu Leu Ala Val Ile Gly His Thr Phe Pro Ile	
85 90 95	
ttt gca gga ttt aaa ggt ggt aag gct gtc gca acc agt gct gga gtg	336
Phe Ala Gly Phe Lys Gly Gly Lys Ala Val Ala Thr Ser Ala Gly Val	
100 105 110	
att ttc gga ttt gcg cct atc ttc tgt ctc tac ctt gcg att atc ttc	384
Ile Phe Gly Phe Ala Pro Ile Phe Cys Leu Tyr Leu Ala Ile Ile Phe	
115 120 125	
ttt gga gct ctc tat ctt ggc agt atg att tca ctg tct agt gtc aca	432
Phe Gly Ala Leu Tyr Leu Gly Ser Met Ile Ser Leu Ser Ser Val Thr	
130 135 140	
gca tcg att gcg gct gtt atc ggg gtt ctg ctc ttt cca ctt ttt ggt	480
Ala Ser Ile Ala Ala Val Ile Gly Val Leu Leu Phe Pro Leu Phe Gly	
145 150 155 160	
ttt atc ctg agt aac tat gac tct ctc ttc atc gct att atc tta gca	528
Phe Ile Leu Ser Asn Tyr Asp Ser Leu Phe Ile Ala Ile Ile Leu Ala	
165 170 175	
ctt gct agt ttg att atc att cgt cat aag gac aat ata gct cgt atc	576
Leu Ala Ser Leu Ile Ile Ile Arg His Lys Asp Asn Ile Ala Arg Ile	
180 185 190	
aaa aat aaa act gaa aat ttg gtc cct tgg gga ttg aac cta acc cat	624

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642

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 Glu His Gly Ser Gly Asn Leu Gly Ala Thr Asn Ala Phe Arg Thr Leu
 35 40 45
 Gly Val Lys Ala Gly Ser Val Val Ile Ala Gly Asp Ile Leu Lys Gly
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 Thr Leu Ala Thr Ala Leu Pro Phe Leu Met His Val Asp Ile His Pro
 65 70 75 80
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 85 90 95
 Ala Lys Phe Lys Gly Gly Lys Ala Val Ala Thr Ser Gly Gly Val Leu
 100 105 110
 Leu Phe Tyr Ala Pro Leu Leu Phe Ile Thr Met Val Ala Val Phe Phe
 115 120 125
 Ile Phe Leu Tyr Leu Thr Lys Phe Val Ser Leu Ser Ser Met Leu Thr
 130 135 140
 Gly Ile Tyr Thr Val Ile Tyr Ser Phe Phe Val His Asp Thr Tyr Leu
 145 150 155 160
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 20 25 30

48

96

gag cac gga agc ggc aac tta ggc gct acc aat gca ttc cgt aca ttg 144
 Glu His Gly Ser Gly Asn Leu Gly Ala Thr Asn Ala Phe Arg Thr Leu
 35 40 45

 ggt gta aaa gct ggt tgc gtc gtc ata gcc gga gat att ttg aaa ggg 192
 Gly Val Lys Ala Gly Ser Val Val Ile Ala Gly Asp Ile Leu Lys Gly
 50 55 60

 aca ctg gca act gca ttg cct ttt ctc atg cat gtt gat att cac ccg 240
 Thr Leu Ala Thr Ala Leu Pro Phe Leu Met His Val Asp Ile His Pro
 65 70 75 80

 ctt ctt gca gga gtc ttt gcg gtt tta ggc cac gtg ttt ccc atc ttc 288
 Leu Leu Ala Gly Val Phe Ala Val Leu Gly His Val Phe Pro Ile Phe
 85 90 95

 gcc aaa ttt aaa ggc ggt aaa gcc gtg gcg aca tca gga ggc gtt ttg 336
 Ala Lys Phe Lys Gly Gly Lys Ala Val Ala Thr Ser Gly Gly Val Leu
 100 105 110

 cta ttt tac gca ccc ctg tta ttt atc acg atg gtt gcg gta ttc ttc 384
 Leu Phe Tyr Ala Pro Leu Leu Phe Ile Thr Met Val Ala Val Phe Phe
 115 120 125

 atc ttt tta tac ttg act aaa ttt gtt tct ctc tca tgc atg tta aca 432
 Ile Phe Leu Tyr Leu Thr Lys Phe Val Ser Leu Ser Ser Met Leu Thr
 130 135 140

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 Gly Ile Tyr Thr Val Ile Tyr Ser Phe Phe Val His Asp Thr Tyr Leu
 145 150 155 160

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 Leu Ile Val Val Thr Leu Leu Thr Ile Phe Val Ile Tyr Arg His Arg
 165 170 175

 gcg aac att aaa cga att atc aat aaa aca gaa cct aaa gta aaa tgg 576
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 tta taa 582
 Leu

<210> 5

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<212> DNA

<213> Bacillus subtilis

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<400> 7

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<400> 8

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<211> 21

<212> DNA

<213> Streptococcus pneumoniae

<400> 9

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<210> 10

<211> 24

<212> DNA

<213> Streptococcus pneumoniae

<400> 10

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<210> 11

<211> 642

<212> DNA

<213> Streptococcus pneumoniae

<400> 11

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<212> DNA

<213> Bacillus subtilis

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catgagaaaa	ggcaatgcag	ttgccagtgt	ccctttcaaa	atatctccgg	ctatgacgac	420
cgaaccagct	tttacaccca	atgtacggaa	tgcatttgta	gcgcctaagt	tgcgcgttcc	480
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